

WHAT IS CLAIMED IS:

Sub a, 1. A power supply comprising:
an AC/DC converter which receives AC power, converts said AC power into DC power, and outputs said DC power;

a DC/DC converter which receives said DC power from said AC/DC converter, and controls a level of an output voltage of said DC/DC converter to be equal to a level of a voltage to be used by a load while said DC/DC converter supplies said output voltage to said load;

a DC converter which is connected to an input of said DC/DC converter; and

a DC power storage means which supplies electric power to said DC/DC converter through said DC converter.

2. A power supply according to Claim 1, wherein said DC converter controls an output voltage of said DC converter to be boosted over a voltage of said DC power storage means while said DC converter supplies said electric power received from said DC power storage means to said input of said DC/DC converter.

3. A power supply according to Claim 1, wherein, when electric power is interrupted or said AC/DC converter cannot maintain ^{sufficient} electric power ^{output} ~~enough~~ to be consumed by said load, said DC converter controls an output voltage of said DC converter to be boosted over a voltage of said DC power storage means while said DC converter supplies said electric power from said DC power

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4. A power supply according to Claim 2, wherein said DC converter includes:

a transformer having a high-voltage side winding connected to said AC terminal of said first converter, and a low-voltage side winding; and

5. A power supply according to Claim 3, wherein said DC converter is connected to an output side of said AC/DC converter so that said DC converter controls an output voltage of said DC converter to be lower than an output side voltage of said AC/DC converter while said DC converter outputs said electric power from said AC/DC converter to thereby charge said DC power storage means.

6. A power supply according to Claim 4, wherein said DC converter is connected to an output side of said AC/DC converter so that said DC converter controls an output voltage of said DC converter to be lower than an output side voltage of said AC/DC converter while said DC converter outputs said electric power from said AC/DC converter to thereby charge said DC power storage means.

7. A power supply according to Claim 6, wherein each of said first and second converters performs power

conversion on the basis of ON/OFF actuation of a semiconductor switching device contained in each of said first and second converters.

8. A power supply according to Claim 3, wherein said DC converter includes:

a first converter having an AC terminal, and a DC terminal connected to said input of said DC/DC converter;

a transformer having a high-voltage side winding connected to said AC terminal of said first converter, and a low-voltage side winding; and

a second converter having an AC terminal connected to said low-voltage side winding, and a DC terminal connected to said DC power storage means.

9. A power supply according to Claim 8, wherein said DC converter is connected to an output side of said AC/DC converter so that said DC converter controls an output voltage of said DC converter to be lower than an output side voltage of said AC/DC converter while said DC converter outputs said electric power from said AC/DC converter to thereby charge said DC power storage means.

10. A power supply according to Claim 9, wherein each of said first and second converters performs power conversion on the basis of ON/OFF actuation of a semiconductor switching device contained in each of said first and second converters.

11. A power supply according to Claim 2, further comprising a charger connected to an AC input for

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converting AC power into DC power and charging said DC power storage means with said DC power.

12. A power supply according to Claim 3, further comprising a charger connected to an AC input for converting AC power into DC power and charging said DC power storage means with said DC power.

13. A power supply according to Claim 3, wherein: said AC/DC converter includes a power interruption signal detecting circuit which generates a power interruption detection signal when said circuit detects interruption of said AC input; and said DC converter supplies DC power to said DC/DC converter when said power interruption detection signal is supplied to said DC converter.

14. A power supply according to Claim 1, wherein: said AC/DC converter includes a plurality of unit AC/DC converters connected in parallel with one another; said DC/DC converter includes a plurality of unit DC/DC converters connected in parallel with one another; and said DC converter includes a plurality of unit DC converters connected in parallel with one another.

15. A power supply comprising a plurality of power supply units connected in parallel with one another, wherein each of said plurality of power supply units includes:

an AC/DC converter which receives AC power, converts said AC power into DC power, and outputs said DC power;

a DC/DC converter which receives said DC power

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from said AC/DC converter, and controls a level of an output voltage of said DC/DC converter to be equal to a level of a voltage to be used by a load while said DC/DC converter supplies said output voltage to said load;

a DC converter which is connected to an input of said DC/DC converter; and

a DC power storage means which supplies electric power to said DC/DC converter through said DC converter.

16. A power supply according to Claim 1, further comprising a second DC/DC converter connected between an output of said AC/DC converter and said first-mentioned DC/DC converter, wherein:

said AC/DC converter outputs said DC power to said input of said first-mentioned DC/DC converter through said second DC/DC converter; and

said first-mentioned DC/DC converter includes a plurality of unit DC/DC converters connected in parallel with one another.

17. A power supply according to Claim 1, further comprising a second DC/DC converter connected between an output of said AC/DC converter and said first-mentioned DC/DC converter, wherein:

said AC/DC converter outputs said DC power to said input of said first-mentioned DC/DC converter through said second DC/DC converter;

said first-mentioned DC/DC converter includes a plurality of unit DC/DC converter groups each of which is

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constituted by a plurality of unit DC/DC converters connected in parallel with one another; and

said plurality of unit DC/DC converter groups have a common input and supply electric power to independent load portions, respectively, constituting said load.

18. A power supply according to Claim 1, further comprising a second DC/DC converter connected between an output of said AC/DC converter and said first-mentioned DC/DC converter, wherein:

said AC/DC converter outputs said DC power to said input of said first-mentioned DC/DC converter through said second DC/DC converter; and

said first-mentioned DC/DC converter includes a plurality of unit DC/DC converters which have a common input connected to said second DC/DC converter, and outputs for supplying electric power to independent load portions, respectively, constituting said load.

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